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ABSTRACT

This longitudinal study of bilingual language acquisition analyzes the of acquisition obtained is compared to that obtained by Brown (1973) for monolingual in English and Chichewa (a Bantu language of East Central Africa). The order of acquisition obtained is compared to that obtained by Brown (1973) for monolingual English speaking children and that obtained by Hakuta (1974) for a child second-language learner. No correlation is found between the present study and either Brown's study or Hakuta's. An explanation of the results is attempted in an examination of the possible factors influencing the order of acquisition obtained. These influences are considered to be both external input and internal grammatical/semantic complexity of the English morphemes, presence/absence of equivalent morphemes in the other language, etc. It is concluded that all these factors affect the order of acquisition of grammatical morphemes in a bilingual child. (Author)

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An Analysis of the Order of Acquisition of English Grammatical Morphemes in a Bilingual Child

Moira Chimombo

While there is a growing body of literature on the simultaneous acquisition of two languages in young children, none, to my knowledge, has specifically studied the sequence of acquisition of grammatical morphemes in one of the bilingual child's two languages to determine whether this sequence is comparable to that obtained for monolingual speakers or second-language learners of that language. It seems to me that such a study might throw light on the nature of interaction of languages, not only when they are acquired simultaneously, but also when they are acquired/learned sequentially.

Leopold (1939-1949), of course, discusses the interaction between German and English in his daughter's bilingual language acquisition in great detail, on the phonological, morphological, and syntactic levels. However, it is not possible from his data to determine with precision an order of acquisition of grammatical morphemes in either language, which is not to deny the usefulness of his data. For their longitudinal study of Spanish-English bilingual children, Padilla and Liebman (1975) calculated the MLU (mean length of utterance(1)) and found that while MLU increased over time in a way comparable with monolingual children, the children nonetheless showed signs of preference for one language over the other, as shown by the variability in the increase of MLU.

There are a number of studies of the acquisition of negatives and interrogatives by monolingual, bilingual, and second-language learners. The studies of bilinguals and of second-language learners are based upon the study of monolingual English-speaking children by Klima and Bellugi (1966). In a cross-sectional study of Spanish-English bilingual children, Padilla and Lindholm (1976) found that while the acquisition of English wh-questions did not follow the pattern described by Klima and Bellugi, the acquisition of negatives did. Cancino, Rosansky, and Schumann (1978) question Milon's (1974) finding that there were striking similarities between the developmental substages of negation described by Klima and Bellugi for first language acquisition of English and the second-language acquisition of his seven-year-old subject. They doubt especially the reality of Stage I negation, even in first language acquisition. Their study also examines the acquisition of interrogatives, in which they found parallels and contrasts with first-language learners. Ravem (1974, p. 132), however, says of his son, "The similar-

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ities between Rune and L1 learners in the developmental sequence of negative and interrogative sentences are in many ways more revealing than the differences." In two studies of his children learning English as a second language, one of negative and one of interrogative sentences, Wode (1978a, 1978b) is more cautious. He points to individual variations within the major stages of development of a particular structure in the second language, as well as the varying degrees of parallelism between first and second-language acquisition. Hatch (1974) comes to similar conclusions in a study bringing together data from fifteen observational studies of forty second-language learners who had acquired the language naturally. Lightbown (1977), in a longitudinal study comparing the first-language (two-year-olds) and second-language (six-year-olds) acquisition of French, found consistency of meanings expressed, but variations in form. In a cross-sectional study of the use of English prepositions by monolingual English and bilingual French-English speakers, Mougeon, Canale, and Carroll (1977) found that the order of accuracy was the same, but that the bilinguals had a lower accuracy rate for the more difficult prepositions. Natalicio and Natalicio (1971) obtained similar results for the order of difficulty of plural allomorphs of English in the speech of native English and native Spanish speakers.

These studies indicate that patterns of development are discernible within certain structures. Other studies have examined the pattern of development between structures. Cross-sectional studies by Dulay and Burt (1974) of child second-language acquisition and by Bailey, Madden, and Krashen (1974) of adult second-language acquisition showed similarities across different first-language backgrounds in the order of acquisition of English grammatical morphemes. Rosansky (1976), however, questions the validity of such cross-sectional studies in her own study, in which she gives both a longitudinal and a cross-sectional analysis of data on the acquisition of grammatical morphemes by an adolescent. She found that the two rank orders obtained did not correlate in the same individual. The longitudinal study by Hakuta (1974,b) of a Japanese girl learning English as a second language at the age of five gives her order of acquisition of grammatical morphemes. These studies all follow to a greater or lesser degree the study by Brown (1973) of first-language acquisition of English by three (monolingual) children, in which he found an almost invariant order of acquisition of the grammatical morphemes he studied.

The present study is an attempt to replicate the studies of acquisition of grammatical morphemes, but with the subject being a bilingual child, my daughter. Since no studies of monolingual acquisition of Chichewa (one of her two languages, a Bantu language spoken in Malawi and other parts of East Central Africa) have yet been undertaken, I limit myself here to an analysis of her development in English, which I compare

with Brown's and Hakuta's studies of first and second-language acquisition respectively. Since my data are longitudinal, I will not compare my results with cross-sectional study results so as to avoid possible differences due to method.

There are three predictions one could make as to the sequence of acquisition of grammatical morphemes in a bilingual child:

1. That it will be similar to that obtained for monolingual children, since the child is learning the two languages at a similar age and cognitive level to that of the monolingual child learning one.

2. That it will be similar to child second-language acquisition, due to the nature of the interaction between the two languages being acquired.

3. That it will follow neither pattern, since not only age and cognitive level of the child, but also interaction between the two languages will play a part.

I expected to find that the sequence of acquisition of grammatical morphemes in a bilingual child would follow neither pattern, due to the combined effect of age and cognitive level and the interaction of the two languages.

Methodology

The subject of this study is my daughter, Tina. She is now four years old, but the period covered here is from 18 1/2 months to 30 1/2 months, that is, a period of twelve months. This period covers Brown's Stages I through V and beyond (Tina's MLU had reached 4.00 in both languages by the time she was 28 months old). Tina's two languages are Chichewa, my husband's first language, and English, my first language. While Tina was learning both languages simultaneously, Chichewa was dominant until we arrived in the United States, when she was 27 months old, after which English rapidly gained preference. My husband and I had decided, from the beginning, that we should both speak both languages to her (we are both bilingual), so while Chichewa was dominant in her speech before we came to the United States, her English was nonetheless developing, and since English has become dominant, she has not completely forgotten Chichewa. Unfortunately, however, there are no other native speakers of Chichewa in New York, so there is no real incentive for her to continue to speak it.

We made the first tape-recording of Tina in April 1976 (Time I: see Table I for a summary of Times, MLU, and other relevant information). From that time on, we also kept a

Table I

Summary description of speech samples

Time	Age in mos and wks.	Sample type	MLU Chichewa	MLU English	Language preferred: Chichewa Tina	Language preferred: Chichewa Parents	Language preferred: English Tina	Language preferred: English Parents	Country	People Tina was in contact with most: Chichewa-speaking	People Tina was in contact with most: English-speaking
I	18;2	1-hour tape	1.12	1.10	.63	.86	.37	.14	Malawi	father[a] nanny grandmother	mother[a]
II	23;0-23;2	diary data	2.86	1.70	.83	---	.17	---	England	father	mother grandparents
III	26;0	1-hour tape	3.79	2.77	.66	.87	.34	.13	England	---[b]	mother grandparents
IV	28;1	1-hour tape	4.47	4.33	.21	.31	.79	.69	United States	father	mother peers
V	30;2	1-hour tape	3.05	4.20	.20	.31	.80	.69	United States	father	mother peers

[a]Both mother and father are bilingual.

[b]In England, the only Chichewa model Tina had from the age of 23;2 to 27;1 was her mother.

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diary. It is to this diary that I refer for information on Time II, examining specifically a two-week period in August 1976, since we unfortunately did not tape her at that time. We had been in England for two weeks before Time II. The second tape was made when she was 26 months old (Time III). At that time, I was staying with my parents in England with the children, while my husband had already come to New York. I was, for four months (September to December 1976), Tina's only source of input for Chichewa, and I spoke almost exclusively in Chichewa to her, while my parents, who do not speak or understand Chichewa, spoke English to her. The third tape (Time IV) was made just a month after her arrival in the United States, and already showed the tremendous pull of peer influence. Prior to our arrival in the United States, even before we left Malawi, Tina had had very little contact with children her own age, whether Chichewa- or English-speaking. Soon after we arrived in the United States, however, she joined a playgroup in which English was the only common language. The fourth tape (Time V) was made when she was 30 1/2 months old. All this time, we continued to keep a diary, which provides a useful point of comparison with the tapes for verification purposes. Later tapes have yet to be analyzed. All speech recorded was spontaneous.

The tapes were transcribed according to the conventions established by Bloom, Lightbown, and Hood (1973). I calculated MLU in both Chichewa and English at each Time, following Brown's rules. This means that I am able to compare these data with Brown's for the five Stages (Figure I). (cf. Padilla and Liebman's results with Spanish-English bilingual children.)

For purposes of comparison with Brown's study, I deliberately chose to calculate the order of acquisition of the fourteen grammatical morphemes he studied. It becomes a great problem to compare studies if each researcher chooses to concentrate on a number of different morphemes. I could not follow exactly Brown's method for establishing the point of acquisition of a morpheme: correct supply of the morpheme in 90% of the obligatory contexts over three consecutive tapes made two weeks apart, because my tapes were made too far apart. Instead, I took as acquired a morpheme supplied correctly in 90% of the obligatory contexts at one Time, provided that the diary entries for the month in which the tape was made confirm this.

Results

Four morphemes were acquired by Time III, two more by Time IV, and a further two by Time V. The remaining six morphemes were ordered in terms of the percentage of morphemes supplied correctly in obligatory contexts (see Table 2). Both Brown and Hakuta were obliged to follow the same procedure for those grammatical morphemes not acquired by their subjects.

Figure I:
Progression of Mean Length of Utterance

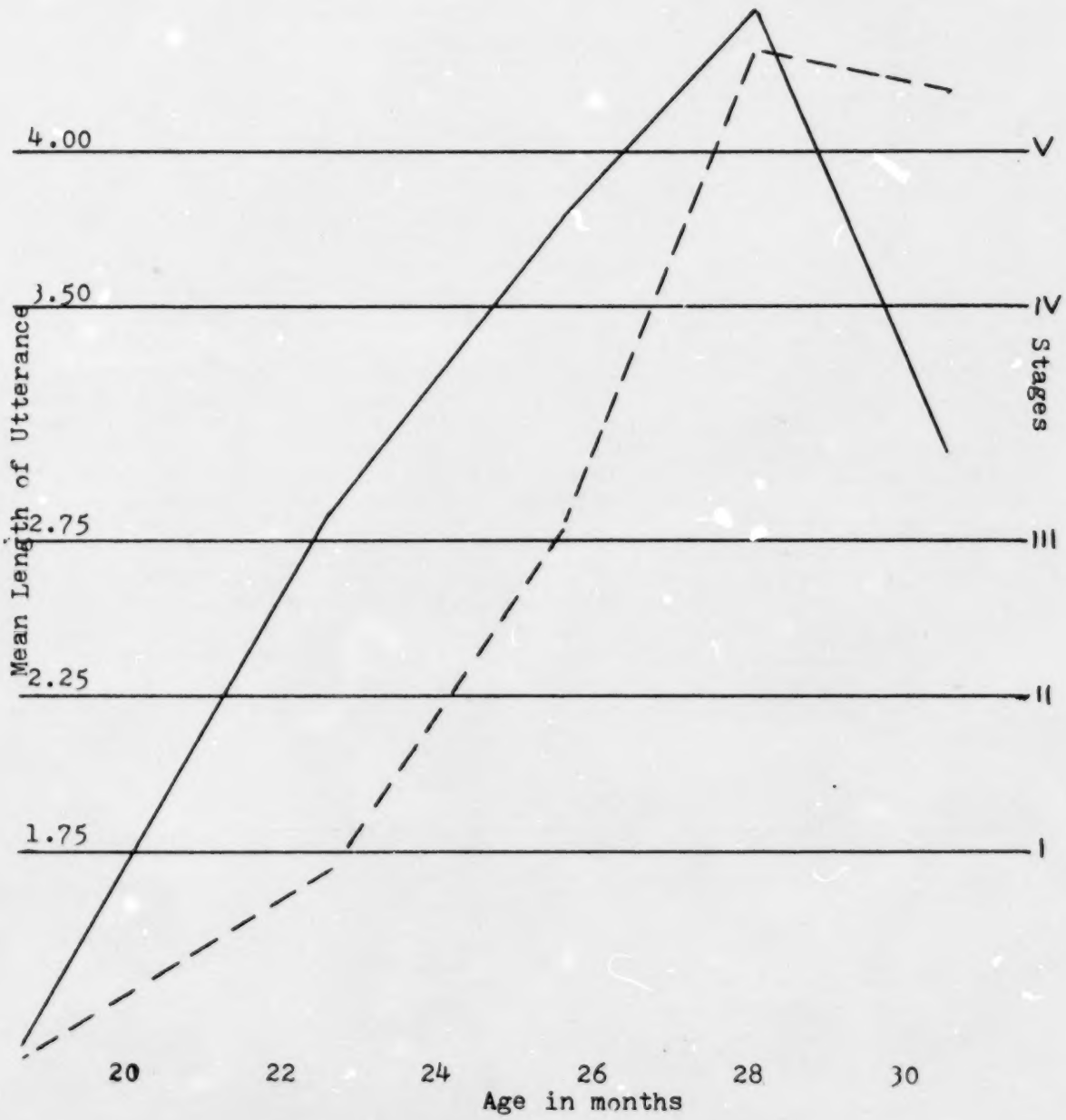


Table 2

Tina's order of acquisition of grammatical morphemes

Acquired by Time V	1.	Contractible Copula
	2.	Possessive
	3.	-ing
	4.	In
	5.	Contractible Auxiliary
	6.	Articles
	7.	3rd Person Irregular
	8.	On
Ranking of % correct	9.	Plurals
	10.	Past Regular
	11.	Uncontractible Copula
	12.	Past Irregular
	13.	3rd Person Regular
	14.	Uncontractible Auxiliary

However, I am not as confident as Brown was about the ordering of the last six morphemes. Of the three children Brown studied, for Adam and Sarah five morphemes had not yet been acquired, while for Eve the number was eight. Brown claimed, "while this is actually an order of level of performance at (Stage) V it probably corresponds quite closely with the order of ultimate acquisition" (p. 272). But when I examined the "order of level of performance" for the eight morphemes Tina had not acquired at Time IV with the "order of level of performance" at Time V, by which time two of those eight morphemes had been acquired (3rd Person Irregular and On), I found that the two orders were very different (see Table 3). As can be seen, the only morpheme that held the same rank was 3rd Person Regular, and in fact the rank order correlation is not significant (p= .22). There is a similar problem in the interpretation of Hakuta's data, since the last five morphemes he studied had not been acquired by his subject at the time of writing.

Table 3

Order for morphemes not acquired at Time IV compared with order of the same morphemes at Time V

	Time IV	Time V
7.	Plurals	3rd Person Irregular
8.	Uncontractible Copula	On
9.	3rd Person Irregular	Plurals
10.	Uncontractible Auxiliary	Past Regular
11.	Past Irregular	Uncontractible Copula
12.	On	Past Irregular
13.	3rd Person Regular	3rd Person Regular
14.	Past Regular	Uncontractible Auxiliary

Putting aside this problem, I found that the rank order correlation between the present study and Brown's study of first-language acquisition was not significant ($p = .10$), nor was it between the present study and Hakuta's study of second-language acquisition ($p = .32$) (see Table 4). This would seem to indicate that my hypothesis was correct, that a bilingual child's acquisition of the two languages does not follow the pattern of acquisition of either a monolingual child or a child second-language learner of the same language. However, an examination of the various influences on the order of acquisition of grammatical morphemes obtained in the present study may throw light on some of the actual processes involved.

Explanation of the Order of Acquisition of Grammatical Morphemes in Tina's English

As I see it, the explanations may be divided into two categories: external influences and internal influences. By external influences, I mean input. By internal influences, I mean those factors specifically related to the language(s): grammatical/semantic complexity, saliency, redundancy, and, in the case of bilingual or second-language acquisition, the two-way interaction between the two languages. I will first consider external factors.

Input

My first thought as to a possible explanation for the difference in Tina's order of acquisition was that, since we, as parents, were speaking both Chichewa and English to her, our input would be different from that of monolingual parents. We might, unconsciously but more consistently than monolingual parents, have avoided those structures we considered too difficult in each language. So I determined the order of frequency of occurrences of the fourteen grammatical morphemes in our speech to Tina as recorded on the tapes (see Table 5). However, while this order of frequency correlated surprisingly highly with that Brown gives for the parents of the three children he studied ($p = .81$), it did not correlate significantly with Tina's order of acquisition ($p = .46$). (This correlation is, however, higher than that obtained between Brown's parents and their children.)

Closer examination of Tina's order of acquisition and parents' order of frequency, however, reveals some interesting similarities which are obscured by statistical analysis. In both cases, for the following five morphemes the relative order is the same:

Contractible Copula
-ing
Contractible Auxiliary
Uncontractible Copula
Uncontractible Auxiliary

Table 4

Order of Acquisition found in Brown's and Hakuta's Studies as Compared to the Present Study

	Chimombo	Brown	Hakuta
Contractible Copula	1	13	3
Possessive	2	6	8
-ing	3	1	3
In	4	2.5	6
Contractible Auxiliary	5	14	3
Articles	6	8	11
3rd Person Irregular	7	11	--[a]
On	8 (7)[a]	2.5	7
Plurals	9 (8)[a]	4	10
Past Regular	10 (9)[a]	9	13
Uncontractible Copula	11 (10)[a]	7	3
Past Irregular	12 (11)[a]	5	9
3rd Person Regular	13 (12)[a]	10	12
Uncontractible Auxiliary	14 (13)[a]	12	3

[a] In order to obtain a rank order correlation between this study and Hakuta's I excluded 3rd Person Irregular in my data, and to, Aux Past, and Gonna Aux in Hakuta's.

Table 5

Order of Frequency of the fourteen morphemes in the parents' speech

1. Contractible Copula
2. Articles
3. -ing
4. Contractible Auxiliary
5. Uncontractible Copula
6. Plurals
7. Uncontractible Auxiliary
8. Possessive
9. 3rd Person Irregular
10. Past Irregular
11. In
12. 3rd Person Regular
13. On
14. Past Regular

Likewise, In and On follow the same relative order, as do 3rd Person Irregular and 3rd Person Regular, and also Articles and Plurals. Tina's order of acquisition does not compare in the same way with Brown's results, and only in one case (In before On) in Hakuta's study. This would seem to indicate that input does play a part in the order of acquisition of grammatical morphemes, but is not an isolated influence. It combines with other factors to influence output.

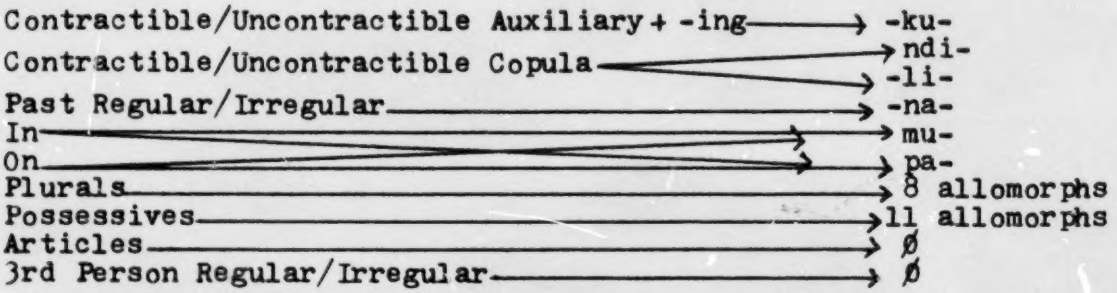
Unfortunately, we have no way of calculating peer influence. However, it must have played a major role, since it was not until Tina enrolled in the playgroup with only English-speaking children that English became dominant.

Internal Influences

In order to come up with a predicted order of acquisition of grammatical morphemes for a child bilingual in Chichewa and English, I propose first to look in turn at each English morpheme or group of morphemes as it/they relate to the equivalent Chichewa morpheme(s) in terms of salience, redundancy, and grammatical/semantic complexity, and thus examine in detail the interaction of the two languages in the acquisition process. Table 6 gives the Chichewa equivalents of the fourteen English morphemes under discussion here. Table 7 visually represents the order of acquisition of the related morphemes and the length of time it took for each morpheme to reach criterion. Only five Chichewa morphemes were acquired, all of these by September 1976, that is, before the time during which Tina was without a native-speaker model for four months.

Table 6

The fourteen grammatical morphemes in English and their equivalents in Chichewa



Present Progressive

I use the term "present progressive" to refer to the full form Auxiliary + V + -ing, not to refer only to -ing as Brown does. The equivalent morpheme in Chichewa is -ku-, which thus compares with the morphemes Contractible/Uncontractible Auxiliary and -ing in English (see Table 6). Some examples from Tina's speech are:

	Chichewa (with translation)	English
I.	Max akuuwa/ Max (dog) he-is-barking	mummy/mummy/coming/ (i.e., 3 utterances)
II.	tikupita kukakwela katungwe/ we-are-going to-climb-on the-swing	I'm coming/
III.	ukubisala?/ are-you-hiding?	I ___ buying some salami/ (i.e., aux. omitted)
IV.	ndikum'sambitsa Dolly/ I [illegible]-her-bathing Dolly	they're going to England/
V.	ndikulumpha/ I-am-jumping	he's riding a motorbike/

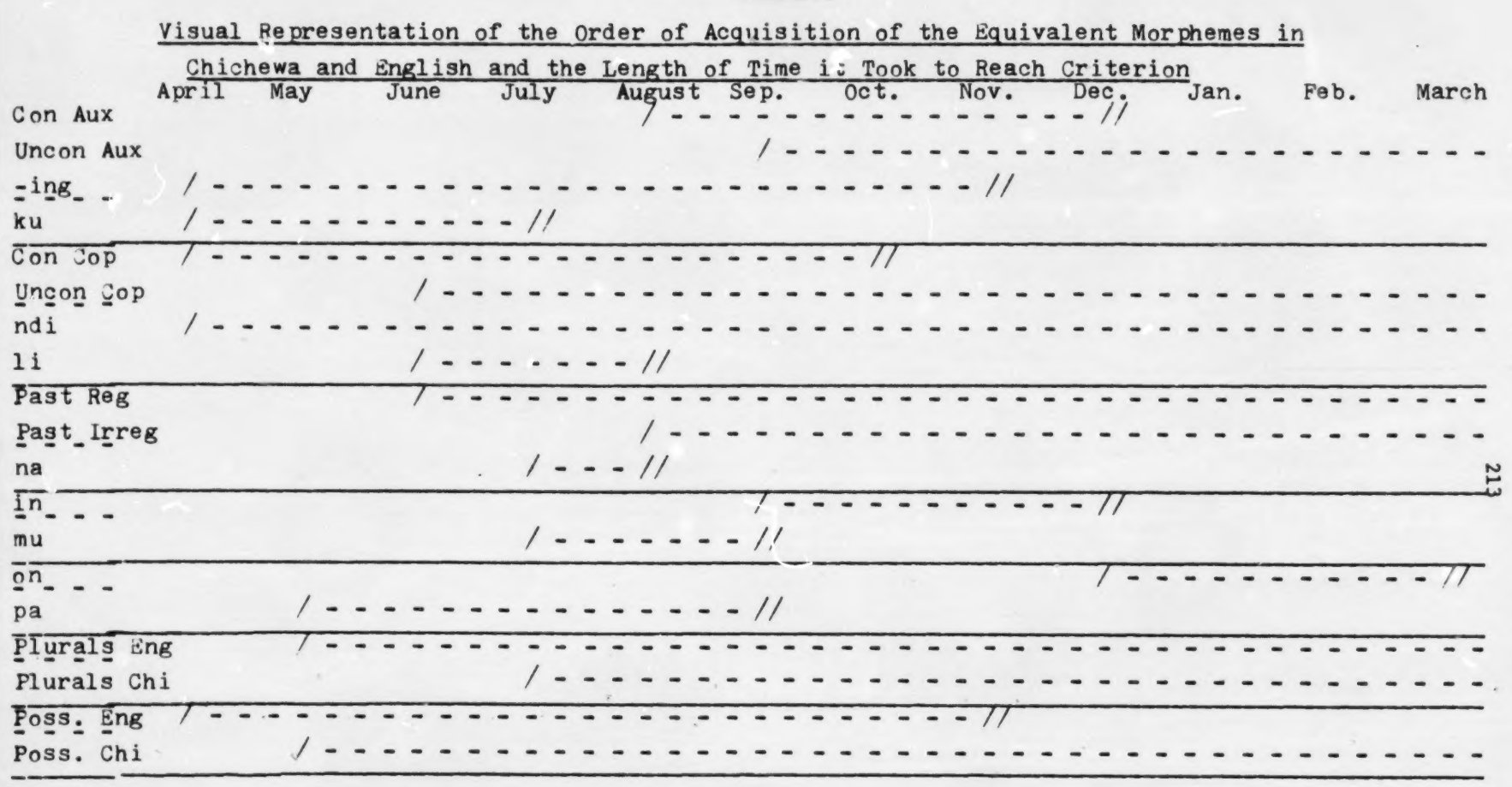
(Roman numerals indicate the Times; /indicates the end of an utterance, as indicated by pauses or falling intonation)

The Chichewa morpheme, -ku-, was acquired before either Auxiliary or -ing, although both -ku- and -ing first appeared at the same time (April 1976, see Table 7). Grammatically speaking, -ku- is obviously simpler than both Auxiliary and -ing combined. In addition, the Auxiliary has three allomorphs, am, is, are, while -ku- is invariant. -ing, like -ku-, is invariant, and in the first-language acquisition literature it is reported as being acquired before the Auxiliary, as here.

Semantically speaking, the Chichewa and English forms are equivalent, both indicating progressive aspect in the present, with only minor differences, which Tina mastered without trouble in either language, for example:

Table 7

Visual Representation of the Order of Acquisition of the Equivalent Morphemes in Chichewa and English and the Length of Time it Took to Reach Criterion



KEY: / month of first appearance of morpheme used in contrast with root form.
// month when criterion was reached.

ndikukhala means I am in the process of sitting down while
ndakhala means I am sitting down (I am seated)

With respect to redundancy and salience, neither -ku- nor -ing is redundant, while the Auxiliary is unnecessary to indicate progressive aspect. Also, both -ing and -ku- are syllabic, while the Contractible Auxiliary, which Tina acquired first, is not. However, according to Slobin's (1973) principle, "pay attention to the end of words," -ing should have been acquired first, since it is a suffix, while -ku- is an infix (cf. he is walking and akuyenda). One can only conclude that grammatical simplicity overruled salience in this case, in addition to the fact that input probably played a part in the earlier acquisition of the Chichewa morpheme.

It seems harder to explain the earlier acquisition of the Contractible Auxiliary than the Uncontractible Auxiliary, since, in terms of salience, one would expect a syllabic allomorph to be acquired first. One explanation may be that elision of vowels is common both in Chichewa and in English. It cannot be explained in terms of Tina having acquired a series of prefabricated patterns in the case of the Contractible Auxiliary, because both contracted and uncontracted forms appeared, for example:

IV. (Looking at a book) Pa Pig is brushing his hair/
Ma Pig's pushing the pram/

The Uncontractible Auxiliary may, however, have first been learned as a prefabricated pattern, because, while all the first occurrences were correct, for example:

Sep. 76 are you coming?/

Tina then occasionally overgeneralized to such forms as

Jan. 77 what are you want?/

It is hard to pinpoint whether this was a prefabricated pattern (are you) or not since there are very few examples. The vast majority are either appropriate (What are you ...?) or with are omitted, and there are no examples of "What ... he/she/they ...?" to compare with Hakuta's (1974,a) examples. The only explanation seems to be that Tina did not need to use the Uncontractible Auxiliary very often. The number of obligatory contexts was zero for Times I, II, III, and V, and only three at Time IV! (In the diary, there are also few obligatory contexts, although more from December 1976 onward.)

Copula

The Copula presents an interesting case of semantic versus grammatical complexity. In Chichewa there are two morphemes, both grammatically invariant, one stative (ndi-) and the other process (-li-), while English does not make the

state-process distinction in the Copula itself. The English Copula, however, has three allomorphs, am, is, are, so is grammatically more complex. The stative ndi- was the first to appear, but once -li- appeared, it was never omitted and was then overgeneralized to contexts where ndi- was required. The English Contractible Copula appeared at the same time as ndi- (April 1976), but only in the 3rd person singular form, 's. The Uncontractible Copula appeared at the same time as -li-. Some examples from Tina's speech are:

	Chichewa	English
I.	ndi nyama/ it's meat	's coffee/coffee/
II.	ndipatse botolo/ndi wanga/ give-me bottle/it's mine/	it's all right, Christopher/
	Christopher ali m'chikuku/ Christopher he-is in-stroller	it is a butterfly/
III.	ali pabiscuit, chizi/ it's on-biscuit, cheese/ (ali should be chili, subject concord for chizi)	there's your dolly, Christopher/ those are dolly's/
	(no examples of ndi-)	I'm hungry/
IV.	Mr. Happy ali pamtengo/ Mr. Happy he's by-tree/	you're a girl, aren't you?/
		he's too small/
	ndi Tina/ it's Tina/	
V.	(no examples)	Tina is a naughty girl/
		she's cold/
		here you are, Christopher/

(Christopher is Tina's younger brother)

The early appearance of 's seems to present an example of positive phonological transfer from Chichewa, because in Chichewa /ts/ is a phoneme which contrasts both with /t/ and with /s/. It would appear, therefore, that the /ts/ in it's, that's, and what's were more salient for Tina than might be the case for monolingual English children. At Time III, 18 of the 24 occurrences of the Contractible Copula were preceded by /t/. However, examples of the uncontracted form it is, that is, what is indicate that it's, that's, and what's were not unanalyzed units. This does not explain the appearance of 'm and 're, and we shall see later that the same phonological feature does not transfer positively in other contexts (for example, 3rd Person Regular). The most likely explanation seems to be that grammatical complexity represents less of a

problem than semantic complexity. English has three grammatical forms, while Chichewa has two semantic forms.

The Uncontractible Copula is a confounding factor. Like the Uncontractible Auxiliary, it was not acquired by Time V. In the case of the Copula, the use of prefabricated patterns cannot be an explanation. But, like the Auxiliary, there are few contexts requiring the use of the Uncontractible Copula. The proportion of contexts requiring Contractible to Uncontractible Copula was as follows:

Time I: 5:0; Time III: 24:5; Time V: 67:11
Time II: 5:0; Time IV: 42:10;

Thus, lack of a need to use the Uncontractible forms of both the Copula and the Auxiliary seems to be the most likely explanation for their late acquisition.

Past

The Chichewa past morpheme -na- corresponds to the English Past Regular (with three allomorphs) and Irregular (with numerous forms). While the /d/ allomorph of the English Past Regular appeared first (June 1976), the Chichewa -na- was acquired first (by August 1976). The same reasons apply here as for the earlier acquisition of the Chichewa -ku- present progressive. In addition, -na- carries stress, which is not true of the English past morphemes, so it has an added advantage. Some examples from Tina's speech are:

	Chichewa	English
II.	ndinaona anti/ I-saw aunty	I got it/ (i.e., I fetched it)
	sanapeze dami yamwana/ she-didn't-find pacifier of-baby	spill__ it/
III.	(no examples)	I wanted sugar, mummy/
		put a raincoat on/
IV.	sindinatope/ I-didn't-tire (i.e., I'm not tired)	you spill__ the water, Dolly/
		I wanted to play with daddy/
		I gave Christopher his milk/
		he say__ Tina/
V.	ndinalira/ndinagwa/ I-cried/I-fell	I bumped my nose/
	ndinapita kuplayground kukakwela katungwe/ I-went to-playground to-climb swing	I go__ to the playground/
		I climb__ in a swing/
		he had a bath/

As mentioned before, the first allomorph of the English Past Regular to appear was /d/. For other verbs, the past morpheme was omitted until Tina used the /id/ allomorph at Time III, but only with the verb want. Since the only obligatory contexts for Past Regular at Time III were with want, she scored 100% at Time III, but only 33.3% at Time IV, and 80% at Time V, when there was a greater variety of obligatory contexts. However, at Times III, IV, and V, there were only 5, 3, and 5 obligatory contexts respectively. Here again, a possible explanation for the delayed mastery of the Past Regular seems to be its relatively low frequency as compared to the frequency of use of some of the other morphemes.

As for the Past Irregular, Tina initially did better than with the Past Regular, which is typical of monolingual English children. But Brown seems to have overlooked the fact that young children search for rules in the language(s) they are learning, such that, once the regular rule is learned it is overgeneralized to contexts where it is grammatically (not semantically) inappropriate. Tina is only now (at the age of four) coming out of the overgeneralization stage, during which all irregular verbs were given the regular past ending. Brown's finding that the Past Irregular was acquired before the Past Regular (in two of the three children he studied) may have been due to the fact that the children had not gone through this overgeneralization stage by Stage V. At the point at which Tina first reached Stage V (Time IV), Past Irregular was ahead of Past Regular in terms of percentage supplied in obligatory contexts, but by Time V the situation had reversed, and Past Regular was supplied correctly 80% of the time, so close to criterion. It is possible that age plays a part. Two of Brown's children were about 42 months old before they reached Stage V, while the third was about 28 months, like Tina. It was the older two who had acquired the Past Irregular before the Past Regular, while the younger one acquired the Past Regular first, like Tina.

3rd Person Regular and Irregular

Chichewa has no morpheme unique to the 3rd Person present form of the English morpheme. In Chichewa, a prefixed inflection on the verb marks the 1st, 2nd, and 3rd persons singular and plural for all tenses, not only the present simple tense. These inflections are, however, more equivalent to English personal/impersonal subject pronouns. I will, therefore, restrict my discussion to the English forms. Some examples from Tina's speech are:

III. want__ to put his socks on/

Teddy want__ some more/

(no examples of has or does, the irregular forms)

IV. Dolly want__ to have a bath/

Aunty wants to come and see Tina/

Mr. Miserable has two eyes/

Tina's got two feet/

V. no, he doesn't want/

he's got a long one like Tina/

he's want__ it/

Dolly want__ to go to sleep/

he wants mummy to carry me/

It is not surprising that these forms were acquired relatively late. In the first place, they are largely redundant, since the subject of the sentence indicates the 3rd Person. Secondly they interfere with the otherwise regular form of English simple tenses (the other simple tenses do not require a distinct verb inflection to mark the 3rd Person). Thirdly, they are not frequently used: only 20 occurrences of 3rd Person Irregular and 11 of 3rd Person Regular appeared in all the parents' speech for Times I, III, IV, and V. The frequency of obligatory contexts in Tina's speech is similarly low: 16 and 12 respectively.

However, it is to be expected that 3rd Person Irregular be acquired before 3rd Person Regular, since the former is more salient, due to the fact that does occurs in all negative and interrogative sentences, and has appears in the present perfect tense in addition to the present simple.

Surprisingly, the positive transfer of the Chichewa phoneme /ts/, which was put forward as a possible explanation for Tina's early acquisition of the Contractible Copula, did not help in the case of the 3rd Person Regular. At Time III, when the Copula was acquired, obligatory contexts for 3rd Person Regular were all with the verb want, but not once was the morpheme supplied. At Time IV again, all the obligatory contexts were with want, but only twice was the morpheme supplied, and at Time V, again with want, it was supplied only once out of three obligatory contexts. An examination of the diary for the month of January 1977 (the same month as the Time IV tape) shows a similar pattern: of 23 obligatory contexts, 21 were with want, the other two verbs being say and hurt. The morpheme was supplied in nine cases with want, and also with say, but not with hurt. Low frequency of need seems again a possible explanation for the late acquisition of the 3rd Person Regular.

In/On

I will consider the two prepositions together, since the Chichewa concepts of containment and support do not correspond one-to-one with the English concepts. Tina didn't even attempt to learn the English usage until she had mastered the Chichewa usage. She simply omitted all English prepositions in the few English sentences she used which required them. Here are some examples from her speech:

	Chichewa	English
II.	gona m'bokosi/ sleep in-the-box	(No examples)
	wakhala pampando/ he's-sitting on-the-chair	
III.	Tina akhale paboti/ Tina must-sit on-the-boat	I can't climb in the boat/
IV.	uthire madzi otentha m'madzi ozizira/ you-should-put water hot in-the-water cold	I want to throw it in the box/
		Would you sit Tina <u>in</u> the bed?/
	Tina agone pabedi/ Tina should-sleep on-the-bed	I want to go to sleep on mummy/
V.	pamawondo/ on-the-knees	Tina's painting in the book/
		I put it <u>in</u> my knees/
	mucart/ in-the-cart	I'm sore on my leg/

It is hard to understand why, once Tina started using the English prepositions, she did not use <u>On</u> until she had mastered <u>In</u>, which she overgeneralized to contexts where <u>On</u> was required. That is not to say that <u>On</u> was absent from her English, but she used it only as a verb particle in such verbs as <u>come on</u>, <u>put x on</u>. Slobin (1973) says that English-speaking children use locative verb particles like <u>On</u> well before the acquisition of prepositions probably because these tend to occur toward the ends of utterances in adult speech. But this does not explain why <u>In</u> was not used in the same way initially.

A further explanation may be that since both end with a nasal /n/, Tina did not immediately discover the difference. This fact, combined with the following observation, seem to provide the most likely explanation. The Chichewa preposition <u>mu</u> (meaning <u>in</u>) can be reduced to <u>m'</u>, as it was in most cases in Tina's speech. It is possible that Tina at first heard the nasal /n/ in both <u>In</u> and <u>On</u> and analyzed it as <u>m'</u> (i.e. /m/) which is also a nasal. Having learned that <u>m'</u> refers to containment, she initially used only <u>In</u>, with no obligatory contexts for <u>On</u>, but later understood <u>In</u> and <u>On</u> to be the same <u>'n</u> and thus overgeneralized <u>In</u> to <u>On</u>. Add to this the fact that the prepositions in the two languages are semantically

not totally equivalent, as the following examples show:

pachitseko	in the doorway (literally, on the door)
mumbale	on the plate (literally, in the plate)

and there may lie an explanation for Tina's pattern of acquisition.

As for other considerations, grammatically, in both languages the concepts of containment and support are expressed with prepositions. However, with respect to salience, Chichewa prepositions have the edge because, in addition to the obligatory appearance in front of the noun, they may be repeated as suffixes on the noun, for example:

munyumbamo	in-the-house-in
patebolopo	on-the-table-on

In terms of frequency, both In and On are relatively low frequency morphemes in the parents' speech: In was used 16 times, and On 8 times over the four recorded Times. In Tina's speech at Times III, IV, and V (there were no obligatory contexts at Times I and II), there were 30 obligatory contexts for In, and at Times IV and V (no obligatory contexts at Times I, II, and III), there were 35 obligatory contexts for On. Thus, although On was acquired later, Tina appears to have needed to use it more than In.

Both prepositions are relatively redundant, since context or the relationship between the two nouns, contained-container and supported-supporter, make the meaning clear. Both were mastered in Chichewa at the same time, so Tina obviously found containment and support equally easy to understand cognitively.

Possessive

Of the eleven English morphemes that have equivalents in Chichewa, the Possessive was the only one that Tina mastered in English before mastering its Chichewa equivalent (that is, ignoring those she had not mastered in either language by Time V). Tina has not yet mastered the Chichewa possessive, since English has become dominant. The differences between the two languages in this case show most clearly the role of grammatical complexity in the order of acquisition of morphemes. Chichewa has eight noun classes, each with its pattern of singular and plural concords for marking the possessor or possessive adjectives, and in addition there are concords for the three locatives, at here/at there, in here/in there, and on here/on there. By comparison, English is easy, with only three allomorphs. That Tina found English easier in this respect is seen in the fact that the Possessive was acquired by November 1976, having been the first to appear (in April 1976, one month before any of the Chichewa allomorphs).

It is clear that it was not semantically a problem for Tina to acquire the concept of possession since she had few problems with the English morpheme, and also, although she did not master the Chichewa morpheme, she used it liberally, but with the wrong concords. The following are some examples from her speech:

	Chichewa	English
I.	(No examples)	mummy's/(referring to bag)
II.	ufuna bukhu wako?/ do-you-want book your? (correct concord for bukhu is lako)	(No examples)
III.	yaChristopher, mama/ of-Christopher, mummy (spoon)	that's Teddy's envelope/ those are Dolly's/(clothes)
IV.	ndifuna sopo waDolly/ I-want soap of-Dolly (correct concord given)	Come and take Christopher's milk/
V.	mikono waTina/ arms of-Tina (correct concord for mikono is yaTina)	mummy's flute is over there/

As can be seen from the above examples, the Chichewa morpheme is a prefix, while the English morpheme is a suffix. This may be an additional reason why the English Possessive was acquired first, following again the principle "pay attention to the ends of words." As Cazden (1968) found for monolingual English-speaking children (the same children as Brown studied), I found that Tina acquired first the elliptical possessive, probably because it is both not redundant and is also more salient. But when she began to attempt the possessor-possessed relation (not possessor alone), she at first seemed to translate in many instances from Chichewa, for example:

Sep. 76 wipe mouth for Teddy/

Oct. 76 eyes for Teddy/

In fact, however, it is probably an overgeneralization of the benefactive use of for, which she may have misunderstood to be parallel to the Possessive 's, by analogy with Chichewa. Once the correct form was learned, this use of for was rare.

Plurals

Like the Possessive, the Plural in Chichewa has eight forms corresponding to the eight noun classes, and so is also grammatically more complex than the English equivalent. As could be expected, the Chichewa plural was not mastered before the English plural, but nor was the English plural mastered by Time V. It was, however, close to being mastered.

It is surprising that Plurals should prove so much more difficult to master than Possessive (9th out of 14, as opposed to 2nd for the Possessive), since both have the same allomorphs. It is clear that Tina had the semantic distinction between singular and plural. At Times IV and V, Plurals were supplied 86.7% and 85.4%, respectively, correctly in obligatory contexts. These high percentages show that she did not consider Plurals redundant. Nor does salience provide an explanation, since Possessive would be equally salient. Neither redundancy nor salience explain the failure to reach 90% criterion although so close to it. The only satisfactory explanation I have is that for some reason Tina made a large number of performance errors, since at Times IV and V the omission of the Plural always preceded or followed immediately upon correct supply of the appropriate morpheme:

IV. Tina's got two eyes/

Tina's got Tina's two arm__/

V. look at my shoe/shoes/

Perhaps the second example should in fact be considered as a form of self-correction. Further examples from Tina's speech are:

	Chichewa	English
I.	maluwa/ flowers (probably not yet analyzed as plural)	puppy__ there/
II.	(No examples)	swan__/
III.	ufuna kudya masticks?/ do-you-want to-eat sticks? (English word given two plurals!)	want to put his socks on/ more flowers/

Articles

There are no direct equivalents in Chichewa for the English definite and indefinite articles the and a. However, one cannot ignore the fact that it is possible to indicate definiteness/indefiniteness with adjectives in Chichewa. This distinction is made specific less frequently than in English, since it is not obligatory. The fact that the distinction can be made, however, would suggest that the difference between the two languages is more of a grammatical than a semantic one. The fact that Tina acquired Articles relatively early (6th, by comparison with Brown, 8th, and Hakuta, 11th) indicates that she did not have too much difficulty with the semantics of definite versus indefinite articles.

Brown, referring to both Karttunen's (1968) and Maratsos' (1971) work, uses the terms "specific" and "nonspecific" to distinguish the semantic from the grammatical forms a and the (1973, pp. 340-356). It is possible that, since the marking

of "specific" is not obligatory in Chichewa, Tina interpreted the as not being obligatorily expressed in English. In addition, she may have interpreted a as an obligatory prefix on all nouns, similar to the plural morpheme a in Chichewa (e.g., abambo--men; akalulu--rabbits). This seems a possibility, since, interestingly enough, Tina, unlike the children Brown studied, only overgeneralized use of the Articles in one direction, using a when the was required, but never using the when a was required. After criterion was reached, she rarely made the mistake of omitting a, but when she didn't overgeneralize a to the, she occasionally omitted the. Some examples from her speech are:

I. it a bird/

II. want __ biscuit/ (a omitted)

where __ zip?/ (the omitted)

it is a butterfly/

III. go in the box/

I will go and buy a basket and then some .../

__ paper plate for __ butter, mummy/ (a and the omitted)

IV. daddy, come and take a cloth/ (the required)

I want a towel for dolly/

Christopher's pulling the plug/

V. Tina's got a blue dress/

I'm climbing on a motorbike/ (the required)

the monkey/ a monkey/ (self-correction)

Summary of Internal Influences

Now I will attempt, on the basis of the preceding discussion, to predict an order of acquisition of the fourteen grammatical morphemes based on grammatical/semantic complexity of the morphemes in English, redundancy and/or salience of the morphemes, and their presence/absence in Chichewa, and to see whether these predictions are confirmed or not, such that we have an explanation for Tina's order of acquisition of these morphemes.

Brown's discussion of grammatical complexity (1973, p. 378), following Jacobs and Rosenbaum's analysis, includes a partial ordering in terms of cumulative transformational complexity:

a. -ing (acquired before) < {Uncontractible Auxiliary, Contractible Auxiliary}

b. Past Irregular < {Past Regular, 3rd Person Irregular < 3rd Person Regular, 3rd Person Regular}

While I agree with the predictions made in a., I do not agree with b. I do not believe Past Irregular can be considered to be less complex derivationally than Past Regular, since it requires an additional, even if minor, morphophonemic rule to translate it from V - -ed to its irregular form. My prediction to replace b. would be as follows:

c. Past Regular < {Past Irregular, 3rd Person Irregular < 3rd Person Regular, 3rd Person Regular}

Since Brown commented on the different orderings between regular and irregular morphemes in his data, I wish to point out that the nature of the irregularity in Past and 3rd Person morphemes is somewhat different. The Past Irregular has many more variants than the 3rd Person Irregular. Brown refers to Gleason's (1961) analysis of the irregular verbs. He lists 13 subclasses having three or more members each, another six containing two verbs each, and 34 containing a single verb each (1973, p. 260). 3rd Person Irregular, however, is not irregular in the same way and to the same extent. For one thing, it is still the -s morpheme which is required, as for the 3rd Person Regular, in the case of do requiring a change in vowel, and in the case of have requiring elision, from haves to has. In addition, only these two verbs are involved, both having a relatively high frequency, whether as main verbs or as auxiliaries.

The above predictions, a. by Brown, and c. replacing Brown's prediction b., were for the most part confirmed. The first prediction was confirmed in full in Tina's order of acquisition: -ing was acquired before either the Contractible or the Uncontractible Auxiliary. With respect to c., however, the 3rd Person Irregular was acquired before Past Regular. Nonetheless, five of the six predictions are confirmed.

Brown also makes predictions based on cumulative semantic complexity (1973, p. 370):

Plural < Uncontractible Copula
Past Irregular < Uncontractible Copula
Plural < 3rd Person Regular
Past Irregular < 3rd Person Regular
Plural < Uncontractible Auxiliary
Past Irregular < Uncontractible Auxiliary
-ing < Uncontractible Auxiliary
Uncontractible Copula < Uncontractible Auxiliary
3rd Person Regular < Uncontractible Auxiliary

In spite of the differences between Tina's order of acquisition of the fourteen grammatical morphemes and that of the three children Brown studied, only one of these predictions is not confirmed for Tina: Past Irregular< Uncontractible Copula. Brown mentioned that one of the three children acquired the Past Regular before the Uncontractible Copula, but not Past Irregular, and this order corresponds to Tina's. Unfortunately however, in spite of this close agreement with Brown's predictions, it must be pointed out that only one of the morphemes on which these predictions are based had reached criterion in Tina's speech by Time V (-ing). These predictions say nothing about the relative ordering of the morphemes Tina had actually acquired.

To predict an order of acquisition of the English morphemes based on the presence/absence of equivalent morphemes in Chichewa, I first established criteria on which to base my predictions:

1. If a morpheme in one language has two or more equivalents in the other language, the former will be acquired relatively early within the order of acquisition of morphemes for that language.

2. If there is a crossover of semantic domains between the two languages, the morphemes may be acquired later.

3. If one language has no morpheme to correspond to morphemes in the other language, the morphemes in the latter language will be acquired relatively late.

(Refer back to Table 6 for the equivalent morphemes.) The predictions for an order of acquisition of the English morphemes are as follows:

1. Copula, Plural, Possessive $<$ {Auxiliary + -ing, Past}

2. In and On must be considered equally complex, and likely to be acquired later than 1.

3. Articles and 3rd Person must be considered equally complex and likely to be acquired after 1. and 2.

Combining all three criteria, we have the following predictions:

Copula, Plural, Possessive $<$ {Auxiliary + -ing, Past} $<$ {In, On} $<$ {Articles, 3rd Person}

Table 8 shows for each of these predictions whether it was confirmed (+) or not (-). Where there are related pairs of morphemes (Contractible/Uncontractible Copula, Past Regular/Irregular, etc.) I have taken as the point of acquisition the time at which the first of the pair was acquired, for the purposes of testing the predictions. Of the 30 predictions made, 18 are confirmed, and 12 are not. Of the predictions not confirmed, five concerned Plurals, four Past Regular, and two On. In these cases, it would seem that the interaction between the two languages did not play a part in the order of acquisition of the fourteen English grammatical morphemes.

Table 8

Predicted order of acquisition of the English grammatical morphemes based on the presence/absence of equivalents in Chichewa

Contractible Copula < Contractible Auxiliary + -ing	+
Plurals < Contractible Auxiliary + -ing	-
Possessive < Contractible Auxiliary + -ing	+
Contractible Copula < Past Regular	+
Plurals < Past Regular	+
Possessive < Past Regular	+
Contractible Copula < In	+
Plurals < In	-
Possessive < In	+
Contractible Copula < On	+
Plurals < On	-
Possessive < On	+
Contractible Copula < Articles	+
Plurals < Articles	-
Possessive < Articles	+
Contractible Copula < 3rd Person Irregular	+
Plurals < 3rd Person Irregular	-
Possessive < 3rd Person Irregular	+
Contractible Auxiliary + -ing < In	-
Past Regular < In	-
Contractible Auxiliary + -ing < On	+
Past Regular < On	-
Contractible Auxiliary + -ing < Articles	+
Past Regular < Articles	-
Contractible Auxiliary + -ing < 3rd Person Irregular	+
Past Regular < 3rd Person Irregular	-
In < Articles	+
On < Articles	-
In < 3rd Person Irregular	+
On < 3rd Person Irregular	-

In order to determine whether redundancy of a particular morpheme played a role in the order of acquisition of grammatical morphemes, I then established predictions based on the degree of redundancy of the morpheme in terms of its semantic content and the need to make it explicit. I considered, for those morphemes which have no equivalents in Chichewa (Articles, 3rd Person), that Tina would possibly think them redundant. The following were my predictions:

$$\text{-ing} < \left\{ \begin{array}{l} \text{Possessive} \\ \text{Plurals} \\ \text{Past} \\ \text{In} \\ \text{On} \end{array} \right\} < \left\{ \begin{array}{l} \text{Auxiliary} \\ \text{Copula} \\ \text{Articles} \\ \text{3rd Person} \end{array} \right.$$

However, in this case, of 29 predictions, only 13 were confirmed. It seems that the relative redundancy of a particular morpheme does not play a major role in the order of acquisition.

Finally, I thought that, since in some cases it seemed that Tina did not have a need to use a particular morpheme, there might be a correlation between the order of frequency of obligatory contexts in her speech and her order of acquisition of the grammatical morphemes. Table 9 shows the order of frequency of obligatory contexts (i.e., disregarding whether the morphemes were supplied correctly or not). This order in

Table 9

Order of frequency of obligatory contexts for the grammatical morphemes in Tina's speech

1. Articles
2. Contractible Copula
3. -ing
4. Contractible Auxiliary
5. Plurals
6. Possessive
7. On
8. In
9. Uncontractible Copula
10. 3rd Person Irregular
11. Past Irregular
12. Past Regular
13. 3rd Person Regular
14. Uncontractible Auxiliary

fact correlates quite significantly with Tina's order of acquisition ($p = .79$). Interestingly, it also correlates with the parents' order of frequency ($p = .73$). These results indicate that there is an indirect relationship between input and order of acquisition: input affects the number of attempts made, which in turn affects the speech with which morphemes are acquired. However, the role of semantic/grammatical complexity and the interaction between the two languages also must play their part, since the correlation is not perfect. This is to be expected, since learning a language is not a passive process.

Conclusions

It is clear from the foregoing discussion that there are multiple influences at work in the young child who is learning to speak, especially if that child is learning two languages simultaneously. However, until the complete process of acquisition of the two languages of this one bilingual child has been studied, conclusions can only be tentative. As we have seen, in this study as well as in other similar studies, data have been analyzed and conclusions drawn before being able to say with certainty that the order given for acquisition of grammatical morphemes is final.

As always, there are limitations to this particular study because it is a case study of only one child. Hopefully, future similar studies will reveal what is generalizable to other instances of bilingual language acquisition and what is particular to the individual child. Of particular interest would be to know just how much the order of acquisition of the English grammatical morphemes varies if the other language is different, for example, if, instead of learning English and Chichewa, a child is learning English and Spanish, or some other combination. Eventually, it might be possible to establish the relative importance of all the different influences: Is input a greater or lesser influence? How important is the interaction between the two languages? and similar questions.

Such studies might throw further light on the nature of second language learning. It would be interesting to know, for example, to what extent age affects the order of acquisition of grammatical morphemes, by comparing the order for a bilingual child, who is learning the two languages being studied simultaneously, with that for a child/adult who learns the same two languages sequentially, one as a first and the other as a second language. Another possibility would be to gather data on monolingual children learning their first language, or bilingual children learning their two languages, in early childhood, and then, at a later date, gather data from these same children learning a second/third language, to find out what other influences may be at work, such as personality and cognitive style.

Footnote

1. The mean length of utterance is the average length, in morphemes, of a child's utterance. This measure has been found to give a more accurate picture of a child's level of language development than chronological age alone.

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